

times, or oftener, as they find necessary. The whole is concluded with a gentle purge, tho' the waters themselves are of a laxative nature.

There is another spring in the town of the same nature, but not so warm, as the Brudel: it is called the Mill-spring, and is only tepid. Those of a warm or weak constitution make use of this instead of the other, both for drinking and bathing.

There are likewise several chalybeat springs in the neighbourhood of Carlsbad; one at half a mile, and the other at two leagues distance from the town. Both of them seem to resemble the water of the Pohun spring at Spa; but are not near so strong. They do not use them medicinally on the spot; but they are brought to Carlsbad, and sold, in order to be drank with their wine. I am,

My Lord,

With the greatest respect,

Grosvenor-street,
Jan. 19th, 1757.

Your Lordship's

Most obedient humble Servant,

Jeremiah Milles.

V. *An Essay towards ascertaining the specific Gravity of living Men.* By Mr. John Robertson, F. R. S.

Read Jan. 27, 1757. **S**OME time last autumn I had occasion to draw up a few examples on the use of a table of the specific gravities and weights of
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of some bodies. Among other things, that occurred then to me, I thought it might be useful to know the specific gravity of men. In order to make some experiments on this subject, I got a cistern made, of 78 inches in length, 30 inches wide, and 30 inches deep : it was constructed as near a parallelopiped as the workman could, to prevent tedious operations in computing the horizontal sections of the cistern by the surface of the water. I then endeavoured to find ten persons, such as I proposed to make the experiments withal ; namely, two of six feet high, two of five feet ten inches, two of five feet eight inches, two of five feet six inches, and two of five feet four inches. One of each height I proposed should be a fat man, and the other a lean one ; but I could not succeed in procuring such men ; and, after waiting till near the middle of October, I was obliged to put up with such, as would submit themselves to the experiment at that season of the year. They were all labouring men, belonging to the ordinary of Portsmouth yard, and, except one or two of them, who were middling sized men, were for the most part very thin and slim made persons. I had also provided a sliding measure to take their heights, and scales to weigh them in. Every thing being prepared, each man stript himself in an adjoining room, and put on a pair of trowsers for decency's sake : his height was first taken, then his weight, and then he immersed (fortified with a large dram of brandy). A ruler, graduated to inches, and decimal parts of an inch, was fixed to one end of the cistern, and the height of the water noted before a man went in, and to what height it rose when he ducked himself under

under its surface ; and of these several observations is the following table composed.

Nº.	Heights. Ft. In.	Wt. Pds.	Ht. Water before immerfed. Inches.	Ht. Water when immerfed. Inches.	Water raifed. Inches.	Solidity.	Weight Water. Pounds.
1	6 02	161	19,30	21,20	1,90	2,573	160,8
2	5 10 $\frac{3}{8}$	147	19,25	21,16	1,91	2,586	161,6
3	5 9 $\frac{1}{2}$	156	19,21	21,06	1,85	2,505	156,6
4	5 6 $\frac{3}{4}$	140	19,17	21,21	2,04	2,763	172,6
5	5 5 $\frac{7}{8}$	158	19,13	21,21	2,08	2,817	176,0
6	5 5 $\frac{1}{2}$	158	19,09	21,26	2,17	2,939	183,7
7	5 4 $\frac{3}{8}$	140	19,05	21,06	2,01	2,722	170,1
8	5 3 $\frac{1}{8}$	132	19,01	20,86	1,85	2,505	156,6
9	5 4 $\frac{1}{8}$	121	18,97	20,76	1,79	2,424	151,5
10	5 3 $\frac{1}{4}$	146	18,93	20,66	1,73	2,343	146,4

In making of these experiments, I remarked some inconveniencies, which I did not at first advert to, and which, at that time, I could not prevent. I intended, that each man should have got gently into the water, immerfed himself all but his head, and so have staid until the motion of the water had ceased ; then he was suddenly to have ducked his head under, and have continued so a few seconds of time, until I had noted the rise of the water ; and, after his leaving the cistern, another was not to go in until the water was free from motion. Could these things have been done, as I had projected, I could have recommended the foregoing table as sufficiently complete : but I must observe, that beside the men's being of different sizes from what I had desired, they were in too much haste to be dismissed (with another dram

after

after dressing); so that the water was not quite still when they got into the cistern: neither could I persuade all of them to lay themselves down gently, much less to keep their heads under water so long a time as one second: so that, in most of the observations, the surface of the water was far from being quite so still, as to render the measures perfectly exact, I being obliged to catch them, as it were, by taking the mean height between the librations. Moreover, the great area of the cistern was no inconsiderable bar to the accuracy I expected. However, as I do not recollect experiments of this kind anywhere recorded, these, perhaps, may give some satisfaction to such persons, who may have the curiosity to desire some knowledge on this subject. Were I to make any more observations of this kind, I would chuse an upright parallelopiped, not above 18 or 20 inches in the side of the square; into which the person should let himself down by steps nailed to the side: for in so small an area the motion of the water would sooner subside; neither would the librations be any thing near so large as on a smaller surface.

One of the reasons, that induced me to make these experiments, was a desire of knowing what quantity of fir or oak timber would be sufficient to keep a man afloat in river or sea water, thinking that most men were specifically heavier than river or common fresh water; but the contrary appears from these trials: for, excepting the first and last, every man was lighter than his equal bulk of fresh water, and much more so than his equal bulk of sea-water: consequently, could persons, who fall into water, have presence of mind enough to avoid the fright

usual on such accidents, many might be preserved from drowning; and a piece of wood, not larger than an oar, would buoy a man partly above water so long as he had spirits to keep his hold. Some things herein advanced will perhaps more readily appear from the following relation.

The Lords of the Admiralty have appointed, for the exercise of the scholars belonging to the royal academy at Portsmouth, a small yacht; wherein, during the summer months, those young gentlemen are taught the practice of working a vessel at sea, under the directions of one of the master-attendants, assisted by eight or ten seamen. The last time this yacht was out, which was about the beginning of last October, one of the scholars was ordered to heave the lead. The youth was about thirteen years old, small of his age, and far from being fat; as he was stepping on the gunnel, he fell over-board: the sea was rough, and the yacht had great way; so that he was presently at a considerable distance from the vessel. The skiff was immediately let down; but the painter not being fast, the rope run an end, and the skiff went adrift. One of the seamen jumped over-board, got into the boat, brought her alongside the vessel, took in another man, and then went after the youth, whom they recovered, after he had been in the water more than half an hour. The young gentleman, relating the affair, said, that as he could swim very little, and judging he should sink if he strove against the waves, he turned on his back, and committed himself to their mercy. He kept himself perfectly calm; and observed, when a wave was likely to break over him, to hold his
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breath,

breath, and to spurt out the water forced into his mouth. His hat, which happened to be tied by a piece of string to one of his coat button-holes, he often held up with his hand, as a signal where he was. Just before the boat came up to him he began to be faint, his eyes became dim, and he thought himself on the verge of sinking. This youth, who, by his prudence, saved himself from drowning, must, at that time, have been specifically lighter than water.

VI. An Instance of the Gut Ileum, cut thro' by a Knife, successfully treated by Mr. Peter Travers, Surgeon, at Lisbon. Communicated by John Huxham, M.D. F.R.S.

Lisbon, August 3d, 1756.

Read Jan. 27,
1757.

ANtonia José da Costa, one of the King's messengers, was attacked by two men, and, after receiving two blows on the head, was stabbed with a knife in the right hypogastric region, about three fingers breadth above the os pubis; the external wound being larger, as the knife was drawn obliquely towards the navel, and might be an inch and half in length, the perforation thro' the peritonæum about three quarters of an inch; the intestine ileum hanging out about ten or twelve inches, and quite pierced thro', the wound in the gut being large enough to admit my fore finger. After clearing the grumous blood with warm